CLAIMS

1. A discrimination sensor that optically detects a surface structure of an object by scanning along a surface of the object, the discrimination sensor comprising:

a light emitting device that emits sensing light to the surface of the object, the sensing light having a sensing area being wide in a direction perpendicular to the scanning direction; and

a light receiving device having a light receiving area that receives light generated on the surface structure of the object when the sensing light is emitted, the light receiving area configured to be wide in a direction perpendicular to the scanning direction.

2. The discrimination sensor according to claim 1, wherein the light emitting device and the light receiving device are integrally provided.

3. The discrimination sensor according to claim 1, wherein the light emitting device individually emits a plurality of sensing light beams having wavelength bands that differ from each other; and

wherein the light receiving device receives lights generated on the surface structure of the object

independently when the plurality of sensing light beams are individually emitted.

4. The discrimination sensor according to claim 3, wherein the light receiving device sequentially receives lights generated on the surface structure of the object when the plurality of sensing light beams are individually emitted.

5. The discrimination sensor according to claim 1, wherein the light emitting device has a plurality of light emitting portions that individually emit sensing light beams respectively, the sensing light beams having wavelength bands that differ from each other; and

wherein the light receiving device receives lights generated on the surface structure of the object independently when the sensing light beams are individually emitted from the plurality of light emitting portions.

6. The discrimination sensor according to claim 5, wherein the light receiving device sequentially receives lights generated on the surface structure of the object when the plurality of sensing light beams are individually emitted from the plurality of light

emitting portions.

7. The discrimination sensor according to either one of claims 3 and 5, wherein the plurality of sensing light beams include a sensing light beam having wavelength band in a range from substantially 700 nm to substantially 1600 nm, and a sensing light beam having wavelength band in a range from substantially 380 nm to substantially 700 nm.

8. The discrimination sensor according to either one of claims 3 and 5, wherein the plurality of sensing light beams include a sensing light beam having wavelength band in a range from substantially 800 nm to substantially 1000 nm, and a sensing light beam having wavelength band in a range from substantially 550 nm to substantially 650 nm.

9. The discrimination sensor according to either one of claims 3 and 5, wherein the plurality of sensing light beams include a sensing light beam set in a band of a wavelength of substantially 940 nm, and a sensing light beam set in a band of a wavelength of substantially 640 nm.

10. The discrimination sensor according to any one of claims 1-9 further comprising a computation/determination unit that performs a computation on a discrimination signal outputted from the light receiving device when lights generated on the surface structure of the object is received, and determines whether or not the discrimination signal is within a predetermined tolerance range.

11. A discrimination sensor that optically detects a surface structure of an object by scanning along a surface of the object, the discrimination sensor comprising:

a sensor unit having an optical path opening widely opened in a direction perpendicular to the scanning direction;

a light emitter that is provided in the sensor unit and emits light;

a light receiver that is provided in the sensor unit and receives light; and

a focusing optical system that focuses the light emitted from the light emitter towards the optical path opening, and focuses light that is incident into the sensor unit through the optical path opening to the light receiver,

wherein the focusing optical system focuses the light emitted from the light emitter towards the optical path opening and onto the surface of the object as a sensing light having a sensing area being wide in a direction perpendicular to the scanning direction, and

wherein the focusing optical system focuses light generated on the surface structure of the object and is incident into the sensor unit through the optical path opening to the light receiver.

12. The discrimination sensor according to claim 11, wherein the focusing optical system and the sensor unit are formed integrally provided.

13. The discrimination sensor according to claim 11, wherein the light emitter individually emits a plurality of sensing light beams having wavelength bands that differ from each other; and

wherein the light receiver receives lights generated on the surface structure of the object independently when the plurality of sensing light beams are individually emitted.

14. The discrimination sensor according to claim 13, wherein the light receiver sequentially receives lights

generated on the surface structure of the object when the plurality of sensing light beams are individually emitted.

15. The discrimination sensor according to claim 11, wherein the light emitter has a plurality of light emitting portions that individually emit sensing light beams respectively, the sensing light beams having wavelength bands that differ from each other; and

wherein the light receiver receives lights generated on the surface structure of the object independently when the sensing light beams are individually emitted from the plurality of light emitting portions.

16. The discrimination sensor according to claim 15, wherein the light receiver sequentially receives lights generated on the surface structure of the object when the plurality of sensing light beams are individually emitted from the plurality of light emitting portions.

17. The discrimination sensor according to either one of claims 11 and 13, wherein the plurality of sensing light beams include a sensing light beam having wavelength band in a range from substantially 700 nm

to substantially 1600 nm, and a sensing light beam having wavelength band in a range from substantially 380 nm to substantially 700 nm.

18. The discrimination sensor according to either one of claims 11 and 13, wherein the plurality of sensing light beams include a sensing light beam having wavelength band in a range from substantially 800 nm to substantially 1000 nm, and a sensing light beam having wavelength band in a range from substantially 550 nm to substantially 650 nm.

19. The discrimination sensor according to either one of claims 11 and 13, wherein the plurality of sensing light beams include a sensing light beam set in a band of a wavelength of substantially 940 nm, and a sensing light beam set in a band of a wavelength of substantially 640 nm.

20. The discrimination sensor according to any one of claims 11-19 further comprising a computation/determination unit that performs a computation on a discrimination signal outputted from the light receiver when lights generated on the surface structure of the object is received, and determines

whether or not the discrimination signal is within a predetermined tolerance range.

21. The discrimination sensor according to any one of claims 11-20, wherein the sensor unit and the focusing optical system are formed of a transparent material integrally with each other,

wherein the light emitter and the light receiver are provided to face the focusing optical system, and

wherein a light shielding processing is performed on a surface of the sensor unit other than the optical path opening.